

R24

HISTORICAL INFORMATION

INTRODUCTION

Site:	<u>Syntex Verona</u>
ID#:	<u>NO D007458154</u>
Break:	<u>1.6</u>
Other:	<u>N/D</u>

In this section, a history of the horse arena incident is presented. A description of each site, the CDC investigation, and toxic effects observed at each site is presented. In addition, a brief review of NEPACCO's operations is also presented. This summary reviews pertinent information on this incident to April 1, 1982.

NORTH EASTERN PHARMACEUTICAL AND CHEMICAL COMPANY (NEPACCO)

NEPACCO leased a portion of a Verona, Missouri manufacturing facility from Hoffman-Taff and then Syntex Agribusiness between 1969 and 1971 to manufacture hexachlorophene. Tetrachlorobenzene is the basic raw material used in this operation. Sodium hydroxide was mixed with the tetrachlorobenzene to form a sodium salt of 2,4,5-trichlorophenol (2,4,5-TCP). A general chemical reaction for this process is presented below (Esposito et al., 1980). It was in this process step that 2,3,7,8-TCDD was formed.



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Results of one analysis of the TCP revealed a TCDD concentration of 0.5 ppm (mg/kg) (Ref. A) distillation process was used to remove the TCDD from the 2,4,5-TCP. Concentration of the TCDD in the still bottom residues occurred because of the low volatility of TCDD. An analysis of the contents of the tank revealed TCDD concentrations of 306-356 (Ref. B) Table 2-1 summarizes the results of the last analysis of the still bottom residues. These residues were the source of the TCDD contamination at the horse arenas.

The manufacturing process for hexachlorophene was completed by reacting the 2,4,5-TCP with an acid and formaldehyde to form hexachlorophene. A general chemical structural formula for this second step is presented below. Dioxins should not have been formed during this reaction (Esposito et al., 1980). TCDD concentrations of 1-2 ppb (mg/kg) were detected in the hexachlorophene, however (Ref A).

The distillation residues from 2,4,5-TCD production were stored in a tank at the Verona plant. The analytical results presented above are from samples collected from this tank. Initially, the wastes were taken to the Rollins incinerator for destruction. In 1971, however, NEPACCO ceased incinerator of these wastes presumably for economic reasons. The Independent

Petroleum Company was awarded a contract to dispose of the wastes between February and October, 1971. Independent Oil was paid \$4,625 to dispose of approximately 18,500 gallons of the distillation residues between February and October, 1971 (Ref. D). The Independent Petroleum Company subcontracted with the Bliss Salvage Oil Company to perform this service.

TABLE 2-1: ANALYTICAL RESULTS OF DISTILLATION
RESIDUES FROM NEPACCO

<u>SUBSTANCE</u>	<u>CONCENTRATION</u>
TCDD	Approximately 50 ppm (mg/kg)
2,4,5-TCP	Not quantified (N.Q.)
acenaphthene or 1,2-dimethyl-4-benzlbenzene	N.Q.
3-methyl-2 butanol or 2 propanol	N.Q.
2,3-butanediol or 2-(2-vinyloxyethoxy) ethanol	N.Q.
n-hexane	
1,3,5 or 1,2,3 trichlorobenzene	
1,2,3,5-tetrachlorobenzene	
dibenzo-cyclooctadiene or p-amenosilbene	
phenyl xylylketone or methyfluorene	
1,1-bis (4'-methylphenyl) dodecane	

Bliss Salvage Oil Company

The Bliss Oil Company is owned by Mr. Russell Bliss of Ellisville, Missouri. Between February 16 and October 25, 1971, Bliss Oil removed wastes from NEPACCO at least six and perhaps seven or eight times. The dates and volumes of waste transported, as reported by Independent Oil and by Bliss Oil, are summarized in Table 2-2. It is apparent from Table 2-2 that there is a discrepancy between the information presented by these sources. For example, Independent Oil stated that approximately 18,000 gallons were removed based upon invoices; whereas, Russell Bliss estimated that only 9000 gallons were removed. Many of the reported dates also do not coincide.

There is also considerable discrepancy as to the hazard of the material as reported to all parties and to the intended means of disposal. Independent Oil (IPC) stated that NEPACCO warned IPC that the waste was hazardous and presented IPC with a sample. IPC, in turn presented a sample to Bliss Oil stating that the material was "hard to handle." Mr. Bliss analyzed the sample by rubbing it between his fingers and tasting it. According to IPC, Mr. Bliss stated that he was going to dispose of this waste in a landfill near Rolla, Missouri used to dispose of radioactive wastes.

TABLE 2-2: SUMMARY OF WASTES TRANSPORTED BY BLISS OIL

<u>DATE</u>	<u>ESTIMATED WASTE VOLUME (GALLONS)</u>
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Source: Independent Oil Company (Ref. F,G)

February 16, 1971	3500
May 20, 1971	3000
May 25, 1971 (2 loads)	6000
August 16, 1971	3000
October 4 1971	<u>3000</u>
	total 18000 gallons

Source: Bliss Oil Company

February 16, 1971	1500
May 20, 1971	1500
May 25, 1971	1500
July 30, 1971	1500
October 4, 1971	1500
October 25, 1971	<u>1500</u>
	total 9000

Mr. Bliss stated that was not paid by IPC to dispose of this waste, his compensation was the salvage value of the material. If this is true, then there would be no incentive for Mr. Bliss to have disposed of the material. Instead, Bliss Oil transported the distillation residues to a tank farm owned by Bliss Oil in St. Louis. The wastes were then placed into a storage tank identified as B-1. Waste oils collected from a number of other locations were also placed into this tank. The generators of some of these waste oils are summarized in Table 2-3.

The majority of the waste oils were sold to M.T. Richards Company in Illinois. The M.T. Richards Company reprocessed the waste oil or used it for dust control. Waste oils that contained too much sludge (greater than 3%) were not accepted by M.T. Richards. These oils were used for dust control by Bliss Oil.

At least seven horse arenas were oiled by Bliss Oil between February and October, 1971. These arenas are summarized in Table 2-4. A farm road owned by Mr. Bliss was also "oiled" with the distillation residues. In addition, several other disposal sites are alleged to exist, and several horse arenas were oiled after October, 1971. These additional sites are summarized in Table 2-5. Photographs of several of these sites may be available as they are referenced in some of CDC's file materials. (8-22-74 letter from P. Neider to Dr. Carter). A summary of the information on these sites follows.

TABLE 2-4: ARENAS OILED BY BLISS OIL AFTER FEBRUARY, 1971

<u>ARENAS</u>	<u>LOCATIONS</u>	<u>DATES</u>
Mid-American	Ellisville, MO	Monthly between 1960 & 1974
Venture Farms	St. Charles, MO	July 20, 1971
Timberline Stables		June 16, 1971
Shenandoah Stables		May 26, 1971
Mental Health Show	New Molle, MO	July 13, 1971
Country Developement Farm	Summit, MO	September, 1971
Bridle Spur Hunt Club		May 24, 1971

Source: Interview with Russell Bliss; August 12, 1974.

TABLE 2-5: SUMMARY OF POTENTIAL SITES USED BY
BLISS OIL FOR WASTE DISPOSAL

Horse Arenas and Roads Oiled After October, 1971

<u>ARENA NAME</u>	<u>LOCATIONS</u>	<u>DATE</u>
Mollah Mounted Lancers	Columbia, IL	Nov. 30, 1973
St. Louis Police Arena	St. Louis, MO	Sept. 19, 1972
Kesmer Farms Stables		Oct. 18, 1973
		Dec. 18, 1973
Blue Bar Farm	Grey Summit, MO	Nov. 28, 1973
		March 4, 1974
Play Day Farm, Stecker Rd.	Ellisville, MO	July 4, 1974
Charles Shaw Farm,		
Fox Creek Rd.		July 19, 1974

Addition Potential Disposal Sites

Clayton Chemical Co.	E. St. Louis, IL
Valley Disposal	Hwy 141, 2 miles south of 21
Simpson Landfill	" "
Hall Street	Unknown
City of Times Beach	Times Beach, MO
Tanks on German Road	St. Louis, MO

Mid-America Arena and Related Sites

The Mid-America Arena is located in Ellisville, Missouri and is owned by Mr. Russell Bliss. This arena was once a month from 1960 to 1974. The location of this site is shown on Figure 2-1.

On May 20, 1971, one of Bliss Oil Company's trucks was ticketed for being overweight while transporting the distillation residues from NEPACCO to the St. Louis storage tank. To decrease the weight, the driver, Mr. Delbert Eskew, stopped at the Bliss Farm and sprayed the farm road with the distillation residues. Because the truck was overweight by approximately 500 gallons, it has been assumed that 500 gallons of distillation residues were dumped on this road.

On May 25, 1971, the horse arena at the Bliss Farm was sprayed with oil remaining in the truck after Shenandoah Stables was oiled. Approximately three days later, seventy chickens and one dog died. Mr. Bliss stated during the 1971 CDC investigation that he believed the chickens died after exposure to a dewormer called dichlorvos. This dewormer was fed to his horses and would have been present in the feces. According to Mr. Bliss, the cannister states that fowl should not be allowed to feed near the contaminated manure; and therefore, Mr. Bliss believed the deaths were caused by the dewormer.

Little additional information is available on the after effects of spraying the still bottom residues or waste oil mixture at this site. Between February and April, 1974, an unidentified